The Nature Conservancy
Protecting nature. Preserving life.

The Nature Conservancy in Alabama
2100 First Avenue North, Suite 500
Birmingham, AL 35203

Tel (205) 251-1155
Fax (205) 251-4444

nature.org/alabama



June 12, 2013

Bennett Beardon
Alabama Water Agencies Working Group
Geological Survey of Alabama
P.O. Box 869999
Tuscaloosa, AL 35486-6999

Re: AWAWG Comments: Approach to Addressing Water Management Issues in Alabama

Dear Mr. Beardon,

Thank you for opportunity to once again comment on the statewide water management plan and policy being developed in Alabama. In our earlier letter, we directed our comments to the Water Management Issues paper developed by the working group. In this letter, we elaborate on our previous comments by outlining a **transparent process informed by science** for identifying, understanding and negotiating tradeoffs.

The Nature Conservancy (TNC) has experience developing water management plans and policies in several other states and suggests the following steps be considered as foundational to the process:

- From our experience, we have found greatest success if a state is able to **pass legislation** that establishes the requirement to develop criteria for ecologically sound water management. Connecticut and Maine provide useful examples: (www.cga.ct.gov/2005/act/Pa/2005PA-00142-R00SB-01294-PA.htm and www.mainelegislature.org/legis/statutes/38/title38sec470-H.html)

- Establish separate **science and policy task forces** and appoint a high-level, experienced liaison to coordinate between them to promote an open and transparent process. Every major sector that has a stake in the outcome should be represented in each working group.
- Agree on a set of **guiding principles** that establish commonalities and frame future discussions among all stakeholders on both task forces. For example, the attached Guiding Principles grounded successful negotiations that led to Michigan's water withdrawal policy. Important principles to guide environmental flow management are to: (1) Include all water bodies. (2) Explicitly link hydrology to ecosystem health. (3) Account for intra- and inter-annual variability.
- Define a **clear path to policy implementation** from the onset to ensure that the ensuing science answers the right management questions. In other words, don't let the science lead on questions of management. Decide in advance how water management will be administered, whether through withdrawal permitting programs, reservoir operating rules stormwater infiltration requirements (or similar) to encourage a systematic approach to implementation. Each of these programs calls for different scientific information and decision support tools.
- Aim for an **ecological risk-based approach**. The science task force can associate ecological outcomes with different degrees of streamflow alteration. The policy group can account for scientific uncertainty by associating appropriate policy actions with different levels of ecological risk. For example, a water withdrawal that is likely to impact ecosystem function significantly may not be permitted; a withdrawal that is likely to have less impact may be permitted with conditions; and a withdrawal that clearly would not impact ecosystem function – such as a small withdrawal from a large river that does not interfere with other water uses – may be permitted automatically. Again, Michigan provides a real-world example of this approach. See Figure 1.
- Aim for **tiered ecological goals** that provide different levels of ecological protection to different water bodies. Having a range of river condition goals deflects negotiations from "what should the standard be" to "what river condition goal should apply to this river?" In water-rich states like Alabama, this usually results in maintaining existing water uses in highly altered "working" rivers, while strongly protecting ecologically valuable waters.
- Invest in a robust **decision support system (DSS)** that can inform negotiations and, ideally, can be adapted to administer a future water management program. Preferably, the DSS would be able to simulate daily streamflow at any location where management decisions will be made. It should also be able to calculate water availability to meet consumptive and non-consumptive water needs under different cumulative water use scenarios.
- Establish a **water use reporting** system. Good understanding of water use prevents poor water management. The science task force would design and lead a process to **quantify relationships between hydrologic alteration and ecological response** for different types of Alabama rivers and streams. Alabama already has a wealth of information, models and expertise available to do this analysis. The Southeast Aquatic Resource Partnership (SARP) has developed a river classification framework, a flow alteration assessment, a flow-ecology literature review (McManamay et al. 2011), a hydrologic foundation and ecological databases (http://sifn.bse.vt.edu/sifnwiki/index.php/Main_Page) for use in Alabama. The

science task force should consult with SARP to determine how best to use this and other relevant information to inform water management, given time and cost constraints.

The policy task force would design and lead a process to **associate ecological responses with river management goals**. They may consider using structured decision making (SDM), an approach that U.S. Geological Survey (USGS) applies to multiple objective problems such as water allocation. A recently proposed 2-year project (to begin Fall/Winter 2013) may produce a statewide model of predicted ecological outcomes of potential water management actions that can be used to evaluate tradeoffs between multiple water management objectives. (For further information, contact Elise Irwin, USGS, Alabama Cooperative Fish and Wildlife Research Unit, 334-844-9190, eirwin@usgs.gov.)

The Nature Conservancy welcomes the opportunity to assist with this process. Our relevant experience includes:

- Assisting with the development of concise legislative language that protects both water users and aquatic ecosystems.
- Serving on science and policy task forces and technical advisory committees; listening to a broad range of water users, educating them about what has worked in other states, and developing innovative solutions that address every sector's concerns.
- Implementing projects with scientific partners, such as academics or the USGS, to develop the scientific foundation and to facilitate local experts to recommend usable streamflow management criteria, based on that science.
- Developing decision support tools to inform and advance stakeholder negotiations.
- Catalyzing the process by finding approaches and funding to develop scientific tools.
- Engaging in direct discussion with water users across multiple sectors to help find common ground.

We look forward to continued collaboration with AWAWG and are available to assist to ensure the plan and policies are grounded in science and involve stakeholders from all sectors to support and move the process forward.

Sincerely,

Chris Oberholster
State Director
The Nature Conservancy in Alabama

Michigan Guiding Principles
March 20, 2007

1. Michigan has an abundance of water resources. There is no overall shortage of water in the State. Currently, water withdrawals in Michigan do not present a crisis.
2. Not all water withdrawals are alike, and have differing levels and types of impacts. Certain water sources can support a large amount of withdrawal without harm to other users or to the ecosystem. Other water sources are more vulnerable to large withdrawals.
3. Some areas of the state have been identified as sensitive to groundwater withdrawals. Current and future withdrawals in these areas require a higher degree of monitoring, scientific research, and understanding.
4. Water is a valuable asset, and if used efficiently, can provide the basis of a strong economy and high quality of life in Michigan.
5. Ground and surface water are strongly interrelated and cannot be viewed as separate and distinct.
6. In order to protect basic ecological function, adequate stream base flow must be maintained.
7. Water use by type of user or by purpose of use is not prioritized.
8. The amount of water withdrawn from a hydrologic system must be sustainable. Water resource sustainability involves the use of scientific analysis to balance the economic, social and environmental demands placed on the resource to ensure that the needs of current and future generations are not compromised by current usage.
9. Indicators of sustainability are important to assessing Michigan's water use.
10. The accuracy and effectiveness of water management is an evolutionary, long-term process that must be continually enhanced with scientific information. Additional monitoring of stream flows, water levels, aquatic ecosystems, and related mapping and analysis is essential to protecting water resources.
11. Any water management process must be consistent with applicable statutory and common law in Michigan, neither abrogating nor expanding the law absent specific legislative action.
12. Consistency of regulation and predictability between state and local units of government are essential to managing the resource.
13. Education is critical for all water users, private and public, to understand their responsibilities for water conservation and efficient use.
14. Local, voluntary problem-solving approaches for resolving water use disputes and withdrawal impacts are the desirable starting point for conflict resolution. Michigan has a role in disputes involving impacts on environmentally sensitive areas. Legal action by any party should be seen as the last option.
15. Withdrawals presenting the greatest risk of causing an adverse impact to natural resources should be the primary focus of a water management process.
16. Information gathered and provided for the purpose of preliminary evaluation of water withdrawal projects must be simple and understandable in the most accurate and represented manner possible.
17. Mitigation of adverse resource impacts is a reasonable alternative for new and expanding water withdrawals where deemed appropriate.
18. Conservation of water resources includes the efficient use and protection of quality.
19. Preliminary evaluation of potential adverse resource impacts on fish populations and other existing water users caused by new water withdrawal must have value to new and existing water users, is important prior to significant economic investment and is critical to determining the need for further analysis.
20. The goals of a water use assessment tool are to provide a better understanding of withdrawal impacts, to minimize water use conflicts, to facilitate water planning among stakeholders, and to assess long-term conservation strategies.

Apse C, DePhilip M, Zimmerman J, Smith MP. 2008. Developing instream flow criteria to support ecologically sustainable water resource planning and management. Final report to the Pennsylvania Instream Flow Technical Advisory Committee, 196 p. http://www.portal.state.pa.us/portal/server.pt/document/440033/pa_instream_flow_report-_tnc_growing_greener-_final.pdf.

Blann K, Kendy E. 2012. Developing ecological eriteria for sustainable water management in Minnesota. The Nature Conservancy http://conserveonline.org/workspaces/mn-ecohydro/documents/developing-ecological-criteria-to-support/view.html.

McManamay RA, Orth DJ, Kauffman J. 2011. Ecological responses to flow alteration in the South Atlantic region: a literature review and meta-analysis. Report to the Southeastern Aquatic Resources Partnership (SARP), 62 p. http://sifn.bse.vt.edu/sifnwiki/images/d/de/FLOW_ECO_REPORT_Final.pdf Data: http://sifn.bse.vt.edu/sifnwiki/index.php/SIFN_flow_ecology.

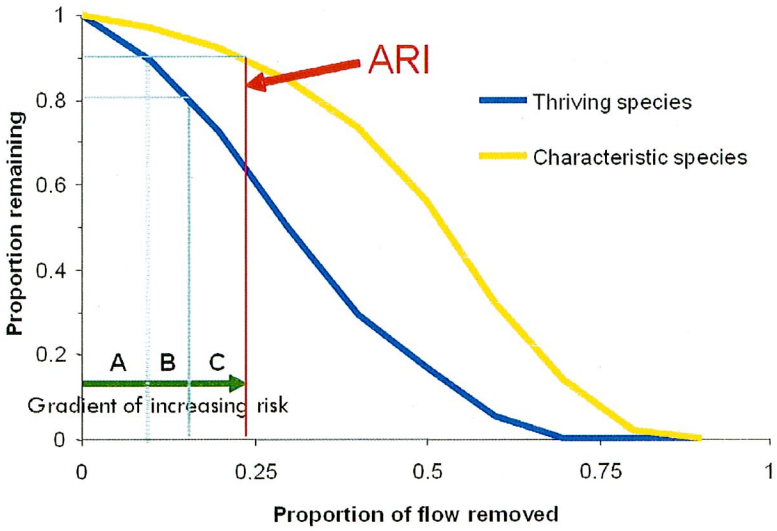


**Figure 1**. Michigan's ecological risk-based approach to water withdrawal management. The graph depicts the relationships amount of water withdrawn from a river type (Proportion of flow removed) and its impact on fish communities (Proportion of species remaining.) ARI indicates Adverse Resource Impact, depicted here as 90% of characteristic fish species remaining, a negotiated value. Light lines indicate thresholds between water management policies associated with different degrees of ecological change. A = register water use, B = notify local water users, C = form a water user committee.